EX PARTE OR LATE FILED

ORIGINAL

WILEY, REIN & FIELDING

1776 K STREET, N.W.
WASHINGTON, D.C. 20006
(202) 429-7000

DAVID E. HILLIARD
(202) 429-7058

FACSIMILE
(202) 429-7049

March 4, 1997

MAR 4 1997

Mr. William F. Caton
Acting Secretary
Federal Communications Commission
1919 M Street, N.W. Room 222
Washington, D.C. 20554

Re: *Ex Parte* Presentations in ET Dockets Nos. 96-8 (Spread Spectrum)

Dear Mr. Caton:

Today, the attached written *ex parte* presentation in ET Docket No. 96-8 was delivered to Julius Genachowski, Counsel to Chairman Hundt.

An original and one copy of this notice are provided. Please contact me with any questions involving this matter.

Respectfully,

David E. Hilliard

David E. Hilliard
Counsel for Cylink Corporation

cc: Julius Genachowski, Esq.

No. of Copies rec'd 0+1
List ABCDE

WILEY, REIN & FIELDING

1776 K STREET, N.W.
WASHINGTON, D.C. 20006
(202) 429-7000

DAVID E. HILLIARD
(202) 429-7058

FACSIMILE
(202) 429-7049

March 4, 1997

By Messenger

Julius Genachowski, Esq.
Counsel to the Chairman
Office of Chairman Hundt
Federal Communications Commission
Room 814
1919 M Street, N.W.
Washington, D.C. 20554

Re: ET Docket No. 96-8

Dear Mr. Genachowski;

I am writing on behalf of Cylink Corporation of Sunnyvale, California, one of this nation's pioneer developers of spread spectrum systems for unlicensed operation under Part 15 of the Commission's Rules. Cylink's ability to continue providing innovative spread spectrum solutions for a variety of point-to-point communications needs will be directly affected by the Commission's actions in ET Docket No. 96-8.

Historical Background

Cylink's interest in this rule making runs back to the original Part 15 spread spectrum rules adopted in 1985. 101 FCC 2d 419 (1985). The original rules specified a one watt limit on the output power of spread spectrum transmitters, but did not impose a limit on the effective radiated power of spread spectrum devices, thereby allowing directional antennas to be employed to reduce radiation in many directions while focusing it in one direction in order to establish a relatively long link. In 1990, the rules were amended to limit the effective isotropic radiated power to 4 watts. 5 FCC Rcd 4123 (1990). This was done by imposing an antenna gain limit of 6 dBi with one watt transmitter output power. Greater antenna gain was allowed if the transmitter power was reduced so that the effective power could never exceed 4 watts no matter how narrow the directional beam. The revised rules became effective in 1994, but the FCC found that the public interest warranted waivers to Western Multiplex, Cylink and others to continue marketing equipment with effective radiated power greater than 4 watts for use in non-consumer fixed point-to-point applications in the 2.4 and 5.8 Ghz bands. The *NPRM* in ET

Docket 96-8 proposes to permit such non-consumer operations on a regular basis in the 5.8 Ghz band and asks whether they should also be permitted at 2.4 GHz.

Operation in the Public Interest

As you advise Chairman Hundt on this rule making proceeding, I hope that you will take a few minutes to review the enclosed background material that explains how non-consumer unlicensed spread spectrum point-to-point links serve many important communications objectives that the Commission is trying to advance. Unlicensed links of the kind for which Cylink makes equipment fulfill the need for a cost-effective means for connecting schools to the internet, tying health clinics to central locations, and upgrading rural telephone service. This equipment also facilitates the early initiation of service in certain licensed services such as PCS. These links can tie together PCS cell sites while permanent microwave facilities are being authorized or wireline/fiber circuits are being built. Although the equipment to operate these links cannot be described as "consumer electronics" because it must be installed by skilled technicians as opposed to members of the general public, the communications made possible by such equipment benefit people from all walks of life.

From Cylink's perspective, the key issue in this proceeding is whether the Commission will amend its rules to ensure that "non-consumer" fixed point-to-point links will be permitted under rules that would limit the power by prohibiting more than one watt of transmitter output power without a limit on the effective radiated power. For this class of equipment, such a regulatory approach has worked well in the past and should continue to be permitted.

I would welcome an opportunity to respond to any questions you might have about Cylink and its recommendations in this proceeding.

Respectfully,

David E. Hilliard

David E. Hilliard
Counsel for Cylink Corporation

Enclosure

cc: Mr. William Caton, Acting Secretary, FCC

Cylink Corporation

Sunnyvale, California

ET Docket No. 96-8

- **Applications That Need Power Above 6 dBw (4 Watts EIRP)**
  - **Intelligent Transportation Systems (e.g Traffic Light Control, Traffic Sensors, and Toll Collection Back-Haul)**
  - **Internet Connectivity for Schools**
  - **Energy Control**
  - **Telemedicine**
  - **Cellular and PCS Backbone**
  - **Thin Route T-1**
  - **Rural Telcos**
  - **Emergency Restoration**

- **Needs and Applications Can Be Temporary or Long Term. Part 15 Spread Spectrum Point-to-Point Links Can Fill the Gap on Short Notice.**

Ex Parte Presentation
March 4, 1997

Technical Considerations

- **4 Watts EIRP at 2.4 GHz Can Support 5 Mile Links vs. 30 Mile Links Now Usable.**

- **4 Watts EIRP at 5.8 GHz Can Support 7.5 Mile Links vs. 24 Mile Links Now Usable.**

- **Lower Power Means More Sites; Greater Expense, and Greater Environmental Impact.**

- **Higher Power is Needed to Overcome Growing ISM Noise Levels, Particularly at 2.4 Ghz.**
  As NTIA has pointed out: "... the dominant [microwave] oven signals can be 30 dB or more stronger than the background aggregate signal level. ***For this reason it is important that designers of equipment to be used in the 2400 - 2500 MHZ band consider the effects imposed by those dominant oven sources, especially if the equipment is to be used in a downtown location."*** Measurements to Characterize Aggregate Signal Emissions in the 2400 - 2500 MHZ Frequency Range, NTIA Report 95-323 (Aug. 1995) (Emphasis supplied) at 22. **CCIR Studies show measured field strength for ISM devices in the 2450 MHZ band ranging from 60 to 120 dBuV/m at 30 meters from the boundaries of buildings in which the ISM equipment is located.** Recommendations of Task Group1/2 (formerly CCIR IWP 1/4), CCIR Document 1 65 E (14 Dec. 1993) at Table 1.

Ex Parte Presentation
March 4, 1997

- **Point-to-Point Non-Consumer Links Have Operated for Nearly 6 Years Without Interference. Some 3000 Cylink transmitters in the U.S. operate in systems with more than 4 watts EIRP without harmful interference.**

- **LANS Are More Likely to Desense Point-to-Point Systems Than Vice Versa.**

Economic Considerations

- **The current waivers to permit antenna gain greater than 6 dB provide not only jobs and technology in the U.S., but support a thriving export business. Cylink systems are also used in 80 countries throughout the world. Foreign policy makers look to the U.S. A change in U.S. policy may affect use in other countries.**

Transition Provisions

- **Transition Provisions Should Foster Flexibility and Accommodate Ongoing Projects.**

  Any restrictive requirements that would reduce EIRP from that now permitted under existing waivers should be implemented over at least a 12 month period after new rules are published in the *Federal Register*.

Ex Parte Presentation
March 4, 1997


CYLINK
LETE NETWORK SECURITY
Cylink Corporation

Inter-Ne

Started in 1984, Cylink Corporation is the world's leading provider of *commercial enterprise-wide information security solutions*, and the pioneer of industry-standard public key management technology. In 1990, the company introduced its line of extremely reliable, long-range, digital, spread spectrum microwave radio systems available in a wide variety of data rates. These wireless communications products are ideal for locations where wired connections are impractical. • The company is headquartered in Sunnyvale, California, U.S.A. with sales and service offices in eight countries around the world. Cylink's customers include Fortune 500 companies, multi-national financial *institutions, agribusiness, construction,* petro-chemical, and numerous U.S. and international government agencies.

A LETTER FROM THE FOUNDERS

"Maintaining our solid leadership position isn't only a reflection of marketshare. In our minds, it's really about the strength of our relationship with Cylink customers. It's about our ability to respond to our customers' needs by providing the highest quality, cutting-edge information security and wireless communications solutions in a global market exploding with commerce and innovation. • When we founded Cylink in the early 1980s, it began as a mission to provide products that filled a critical void in the data security market. Our customers wanted to hop aboard the electronic information and networking bandwagon, but to do so, they had to feel completely secure transmitting their most valuable commodity — information.

A Secure Commitment. It became our commitment to pioneer this path through the development of technology and tools that not only were innovative, reliable, easy-to-use and flexible, but also provided a lasting value and were uncompromisingly secure. It was a great challenge, but we accomplished our objective. In 1984, Cylink, in collaboration with

With three trillion dollars transferred electronically each day all over the world, major banks depend on Cylink to ensure complete security.

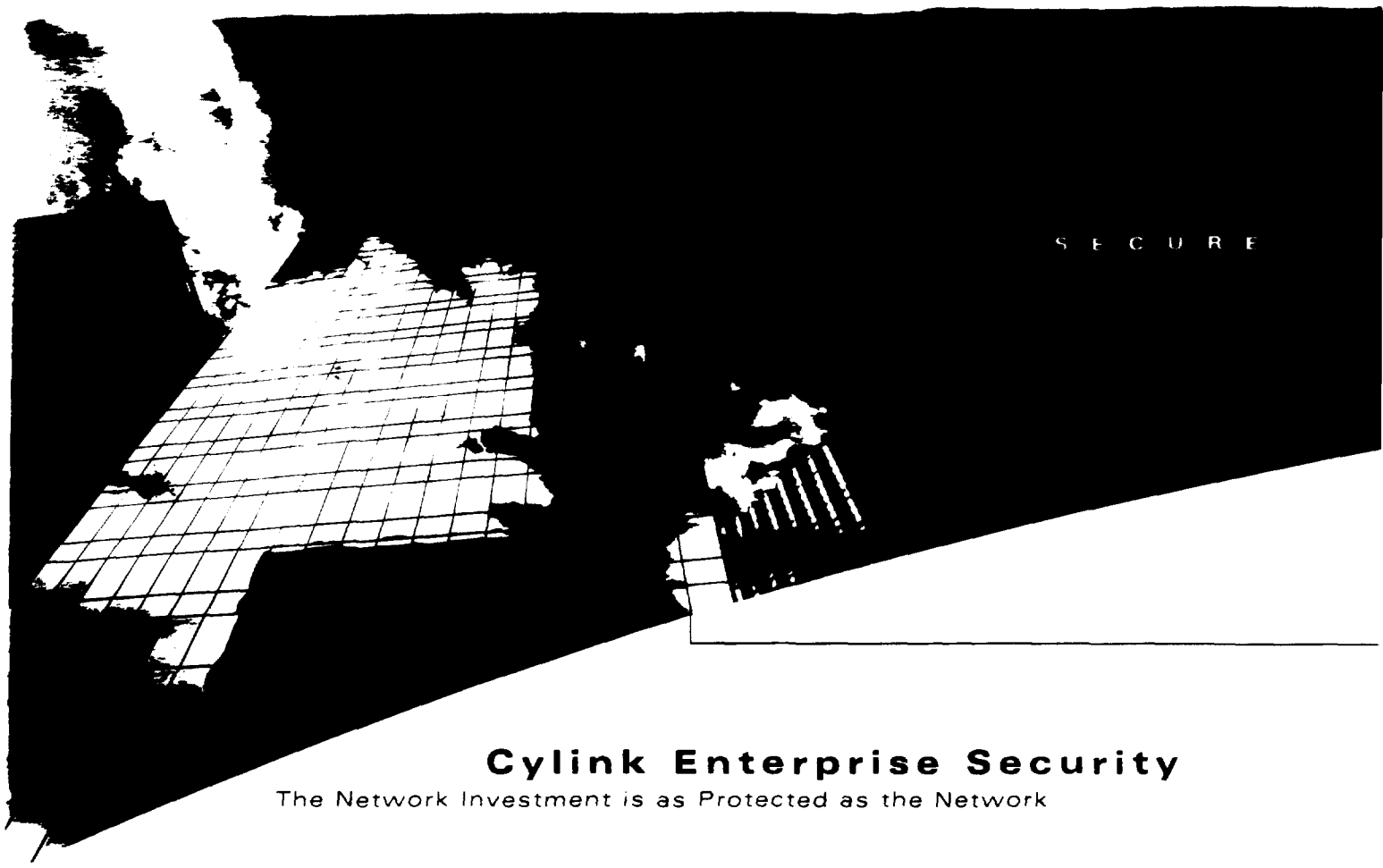
t w o r k i n g

Stanford University, pioneered the commercial implementation of Diffie-Hellman public key management. We also introduced the world's first integration of this public key technology and centralized network management into enterprise-wide information security products for high-speed wide-area network (WAN) security. This enabling technology has become the universal standard for modern network data encryption. It ensures that an organization's business transactions and communications are always completely secure. • But we didn't stop there. In 1987, we pioneered the first public key management co-processor which remains the application-specific integrated circuit (ASIC) industry-standard for public key management acceleration. In 1994, we brought to market the first triple-DES (Data Encryption Standard) encryption algorithm ASIC and the first high-speed triple DES encryptor. • The banner year of 1995 resulted in several new products that changed the face of secure enterprise-wide networks forever. We introduced an advanced security library for software developers, a certificate-based access control system, a certificate-based LAN security system, and the world's first asynchronous transfer mode (ATM) cell encryptor.

The Wireless Revolution. While enterprise security solutions are our landmark business, it isn't our only business. Recognizing the developing need for a wireless data and voice communications infrastructure — where phone lines can't go — we introduced our AirLink™ family of wireless, long-range, digital microwave radio products in 1990. By leveraging our existing spread spectrum technology expertise and adding complementary narrowband products, our reputation as a single source, wireless communications provider has grown dramatically. • We continue to listen to our customers and develop new products with the same promise of high quality, reliability and commitment our name has come to represent. It is precisely this distinction that keeps Cylink in the forefront of the global marketplace, and our customers free to do business where and how they want — without limitations and with complete confidence."

— Cylink Founders Lew Morris and Jim Omura

In remote areas where wires cannot go, AirLinks make communications possible by providing the last mile solution with local telephone companies.



Cylink Enterprise Security

The Network Investment is as Protected as the Network

Prior to the 1990s, a business or organization's information was stored in centralized mainframes running along private networks. Security violations were rare. • However, this sense of security unraveled in the 1990s when enterprises began to take advantage of distributed client/server architectures, such as the Internet — a fundamental shift that has facilitated global business transactions. But with these open, distributed, enterprise-wide networks came unscrupulous hackers responsible for breaches amounting to losses in the millions. • This simply was not acceptable.

Security Has No Limits.

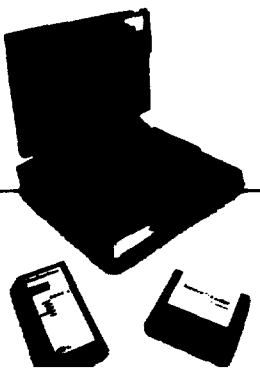
Users have always demanded an effective security solution. This solution must encompass the five critical functions of enterprise security: authentication, access, privacy, integrity and non-repudiation. The solution must integrate easily into existing networks, making migration easy and cost-effective. The approach must be seamless and fully interoperable with applications, nodes and sub-networks under a common administration, and able to run across LANs, WANs and the Internet. It must offer software development tools so organizations can create custom applications to meet their unique requirements. And of course, the best technology must provide complete security, beyond conventional network firewalls and password entry. With all these requirements, how far would a business have to go to protect its most valuable asset — information? • Not far. The secure solution has always been Cylink's family of enterprise-wide information security products.

SecureX25

SecureX25 encrypts from 32 to 512 simultaneous virtual circuits of data rates up to 64 kbps.

SecureWAN

The SecureWAN's high-speed HSi link encryptor for digital networks features the power of DES or Triple-DES encryption.



SecureAccess

SecureTraveler for Windows and SecurePocket Traveler provide access for thousands of remote dial-up users.

We've got too much to lose if there's a security breach. Our data-sensitive applications travel worldwide over multiple, dedicated circuits. Cylink's encryption with both DES and proprietary regional capabilities gave us the peace-of-mind we've got to have. Security problems are now history."

- Director of MIS, large worldwide long distance communications company

"Pharmaceuticals are a competitive business. We needed easy-to-configure products and encryption to secure data links on a worldwide network that passes scientific formulas to various R&D labs. Cylink was the only company able to give us the flexibility, with high and low speed encryption capabilities."

- Vice President, MIS, multinational pharmaceutical corporation

We have a lot of remote users — traveling trial attorneys — who must have server access 24 hours a day. The potential for an unauthorized breach is very real with dial-up connections. Now our lawyers worry about the trial. Cylink takes care of security."

- MIS Director, U.S. Department of Justice

Whether communicating through the Internet or via a corporate network, Cylink security products guard your information at both ends of the network.

Leadership by Design.

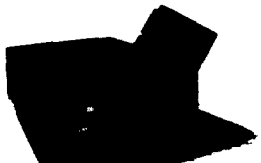
At the core of Cylink's product design is the Secure Enterprise Architecture — S.E.A.Stack™ — which forms the foundation of Cylink's product families: SecureAccess™ for remote access; SecureLAN™ for enterprise local area network security; and SecureWAN™ for wide area network security. • Using its own integrated circuit technology, Cylink provides state-of-the-art performance and superior reliability. As a result, Cylink's security products don't affect network throughput like many of the traditional security alternatives available today. • Cylink also provides custom algorithms, as well as proprietary ICs, including very high-speed DES and Triple-DES encryption engines, and a specialized co-processor for public key acceleration.

Secure Enterprise Architecture.

Cylink's S.E.A.Stack incorporates the elements required for an all-encompassing enterprise-wide security system: encryption, key management, public-key digital signatures, certificates and certificate-issuing authorities, directory services, comprehensive network security management and security protocols. • This powerful and innovative architecture provides privacy, data integrity, authentication, access control and non-repudiation throughout the network with centralized configuration and control. Cylink's key management and authentication, which is completely automated through public key cryptography techniques, makes scalability previously considered impossible, easy to accomplish. • Cylink's family of enterprise-wide information security products makes the network investment as protected as the network.

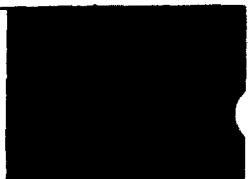
SecureLAN

All SecureLAN products are based on hacker-proof certificate and ryption technology he highest level of



SecureDomain

SecureDomain and SecureNode card allow nodes, domains, subnets and networks to communicate securely and seamlessly.



"We needed a solution that was easy to install, mobile and provided consistent high performance and reliability. Racing officials, drivers and pit crews depended on it. AirLink was the only product that met our requirements."

- Director of Information, U.S. sports car racing organization

"We contracted to help a Pacific Rim government "telco" deregulate to five regional companies ... in only five years! With AirLinks there were no regulatory complications, and installation was fast — requiring no tower — only a three inch mounting pipe. The cost was a fraction of laying wires."

- President, California-based distributor

"When corporate demanded better communications, we knew we couldn't afford to lay lines to our scattered farms and zone offices. And wires would be a maintenance nightmare in the jungle terrain. We had to go wireless. We chose AirLinks because of performance and reliability, we chose Cylink because of the local service and support."

- Regional Manager, Latin American fruit grower and processor

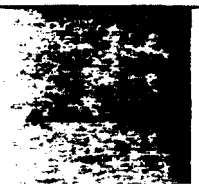
Cylink Wireless Communications

Where Wires Won't Go

Meeting the worldwide market demand for improved communications is one of the highest investment priorities for businesses today, whether it's to carry private voice transmissions across town or data communications over a public network. In developing countries, voice and data communications are not always reliable; yet to compete in the global market, updating existing systems to improve performance, handling increasing traffic requirements, or installing new systems where there are none, can be a matter of national survival.

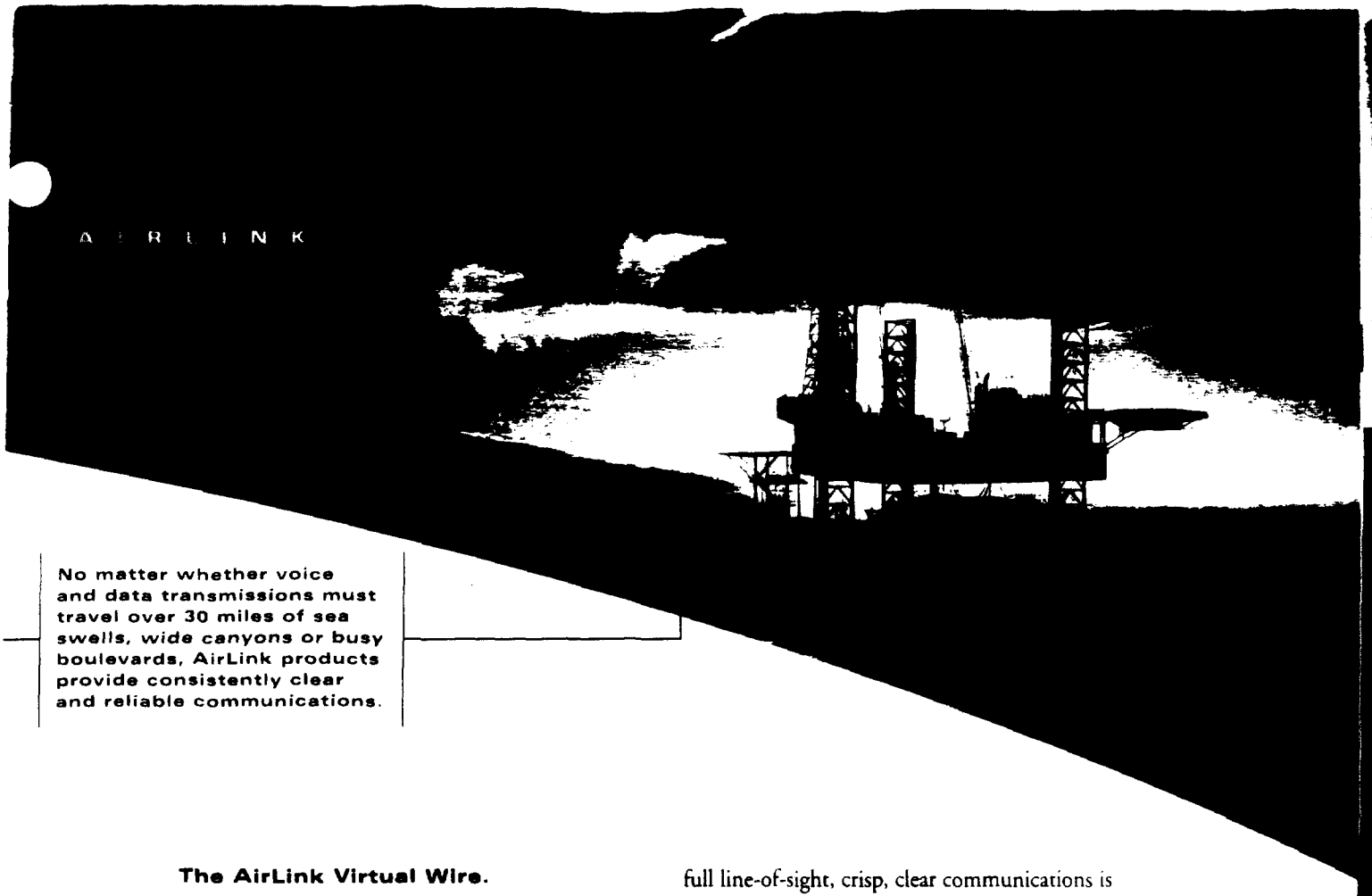
Untethering Communications.
Today, there is a revolution as companies vie for access on leased and dial-up lines to accommodate both routine voice and the exploding trend of electronic data communications. To fill expanding service requirements and overload, many businesses and telephone companies are now choosing wireless communications as a high-quality, reliable and cost-effective alternative to wired infrastructures. • Cylink offers this alternative with its "spread spectrum" microwave technology which increases reliability and minimizes interference. Spread spectrum differs from other commercial microwave technology because it spreads, rather than concentrates the signal. And since the licensing requirements for wide bandwidth technology, such as spread spectrum, have been removed by the FCC and many other international licensing agencies, Cylink's approach makes wireless communications easier and more cost-effective than ever before.

AirLink Product Family



AirLink wireless modems offer powerful point-to-point or point-to-multi-point systems — often without licenses.

Cylink offers a wide variety of antennas customized to work with the AirLink wireless modems.

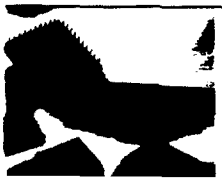


No matter whether voice and data transmissions must travel over 30 miles of sea swells, wide canyons or busy boulevards, AirLink products provide consistently clear and reliable communications.

The AirLink Virtual Wire.

Cylink's AirLink family of digital microwave radio modems is based on a technology that offers all the advantages of reliable service without the monthly bill or limitations of wires. • The AirLink family of wireless modems — point-to-point/point-to-multi-point, AirLink T1/E1, and the AirLink Bridge — provide a cost-effective alternative to wires with their full-featured, error-free digital pathways and easy installation. Through a powerful over-the-air protocol, many links can be distributed from a hub or base station, making AirLink particularly suitable for local distribution from wired, fiber and satellite networks. And for those applications that have a full line-of-sight, crisp, clear communications is accomplished up to 30 miles/50 km, and further with the addition of repeaters. • AirLink products are interoperable with all popular communications technology — bridges, routers, multiplexers and phone systems — and completely transparent to the end-user. Its full-duplex operation, combined with a unique interface and other design enhancements, allows customers to plug into AirLink as if they were using a leased wired line provided by the local telephone company.

Cylink Chips

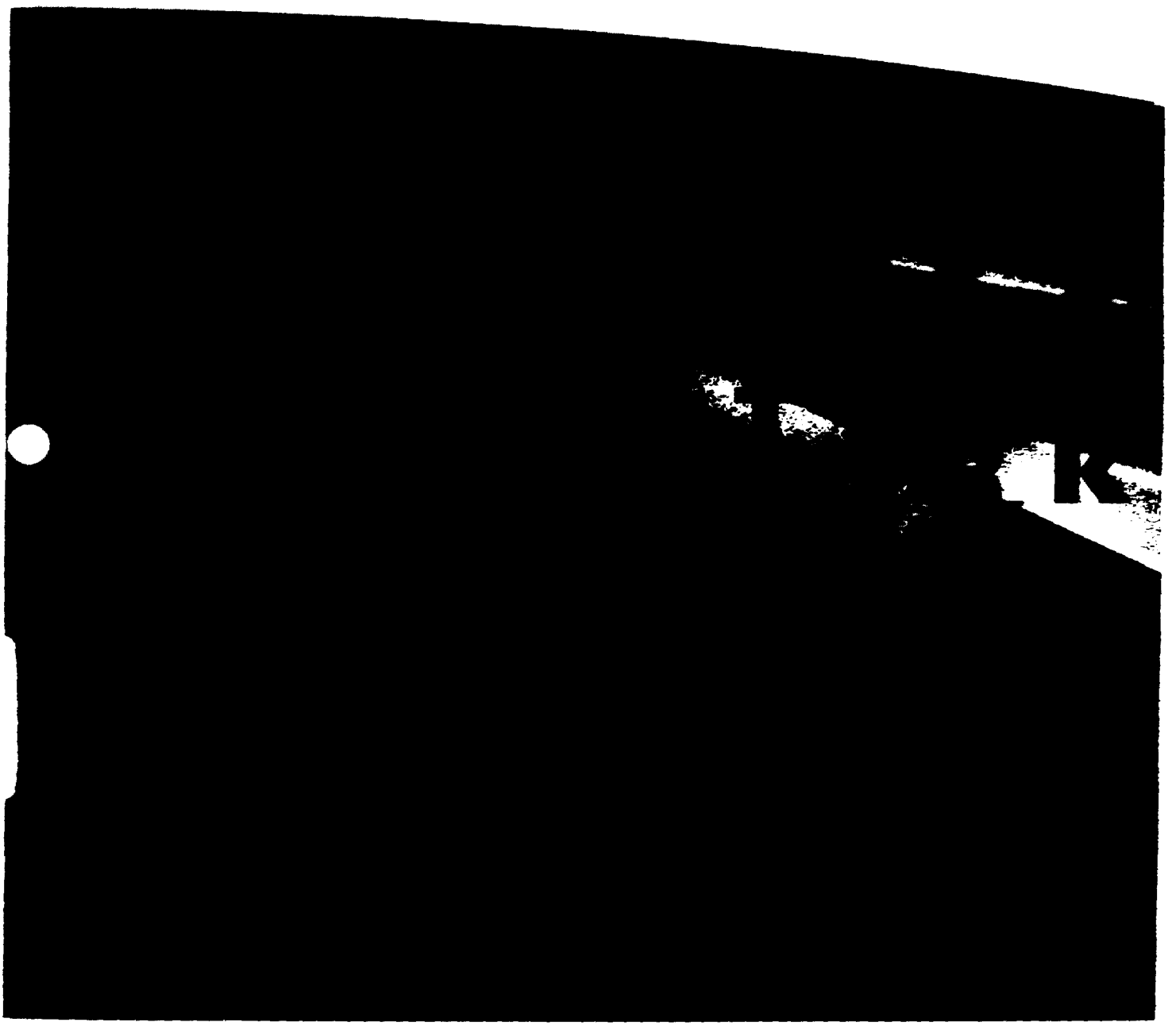


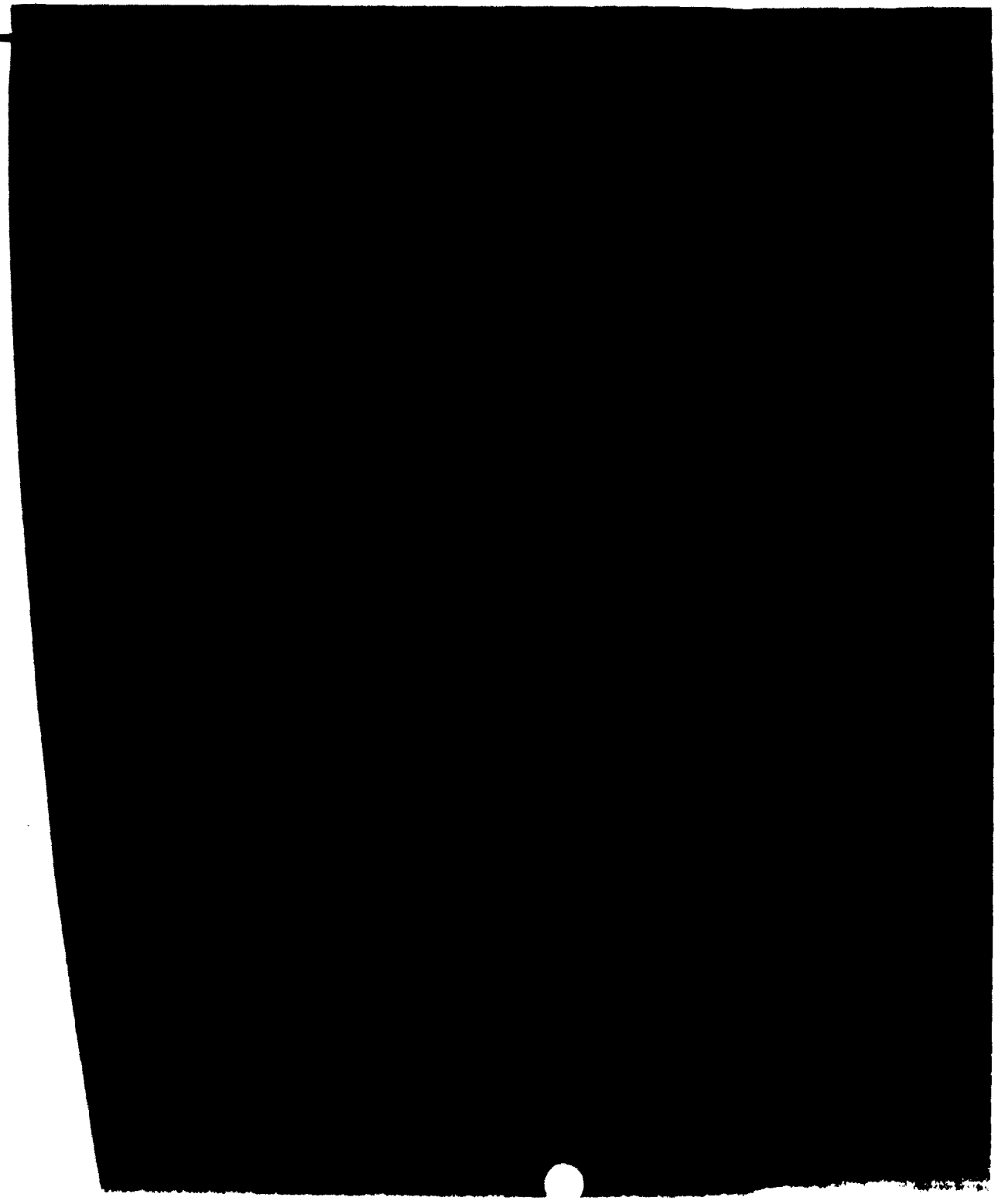
Cylink designs custom ASICs for information security and wireless communications products.

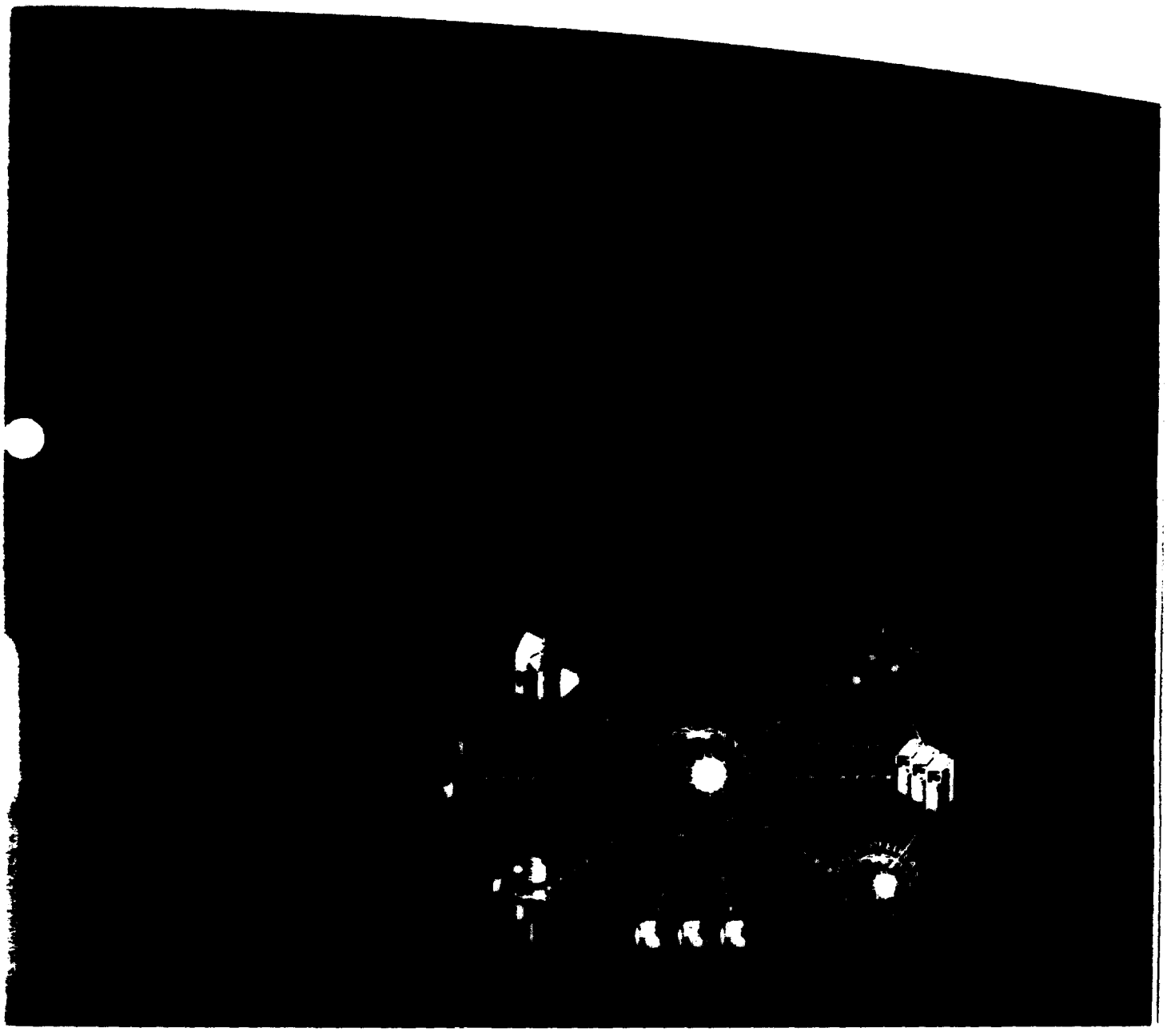
AirLink T1/E1 Radios

Rugged, outdoor design T1/E1 radios are remotely configurable and allow connections and performance to be monitored from the desktop.

AirLink spread spectrum products transmit up to 30 miles and will extend further with repeaters





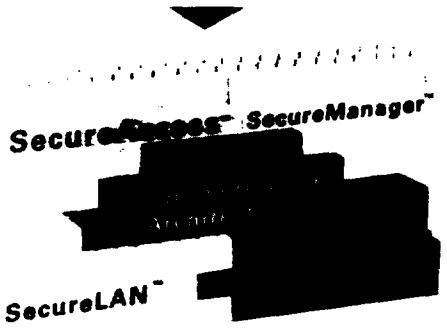


SecureWAN for the Whole Enterprise.

Cylink's SecureWAN family of wide-area internetworking products breaks down the barriers that have historically prevented security-conscious businesses and organizations from utilizing low-cost, open, public networks like X.25, frame relay, ATM and other packet-based options.

SecureWAN products offer wide-reaching security coverage for virtually all public and private packet-based networks, including frame relay with SecureFrame™, and X.25, with SecureX25™. Cylink's SecureWAN products also support dial-up and dedicated networks running ISDN, PSTN, Switch56 and 64 kbps, DDS, T1/E1 and T3/E3.

ENTERPRISE PRODUCT FAMILIES



As with all of Cylink's data security solutions, SecureWAN products are based on industry standards and designed in accordance with Cylink's S.E.A Stack architecture for interoperability, upgradability and scalability. The SecureWAN suite of products integrates seamlessly, do not impact application or network performance, and are completely transparent to the user.

SecureFrame for Total On-Line Security.

The SecureWAN product for frame relay networks, SecureFrame, builds secure, industry standard-based connections between frame relay nodes in private or public networks. SecureFrame ensures controlled network access, source and destination authentication and data encryption to protect the most sensitive information as it moves across the frame relay network.

As with Cylink's SecureLAN family of products, network administrators manage the SecureFrame product using the SNMP-based SecureManager management system. The easy-to-use graphical user interface allows administrators to centrally control and monitor all frame relay network security and operations.

The ATM Encryption Pioneer.

Cylink offers the world's first commercial ATM cell encryptor. This product breaks new ground for implementing secure ATM on public networks.

The ATM cell encryptor provides sure-fire, end-to-end protection of sensitive data by using strong encryption combined with public key management. This product creates *virtual* private networks, resulting in a reduced infrastructure and decreased transmission costs.

SecureManager for Hacker-proof Protection.

SecureManager provides a full suite of easy-to-use enterprise management and certificate authority tools that allow network administrators to configure and customize SecureLAN and SecureWAN devices to meet their own unique requirements, as well as dynamically control and monitor the security of the network in real-time.

Because SecureManager communicates using encrypted SNMP messages, there is no threat of spoofing or eavesdropping. In addition, hacker-proof authentication procedures based on digital certificates prevent the installation and activation of unauthorized SecureLAN or SecureWAN units anywhere on the network.

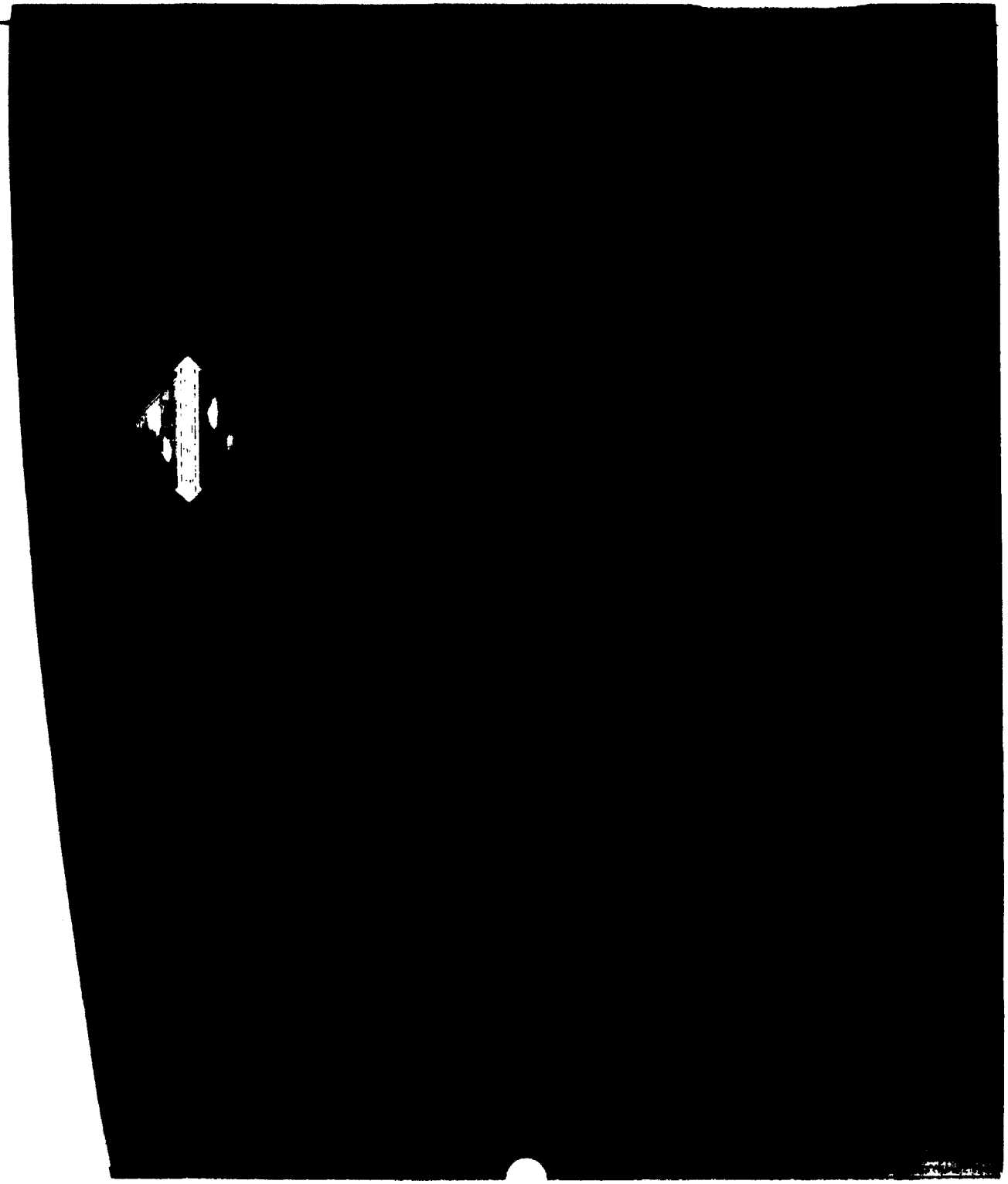
Partners in Success.

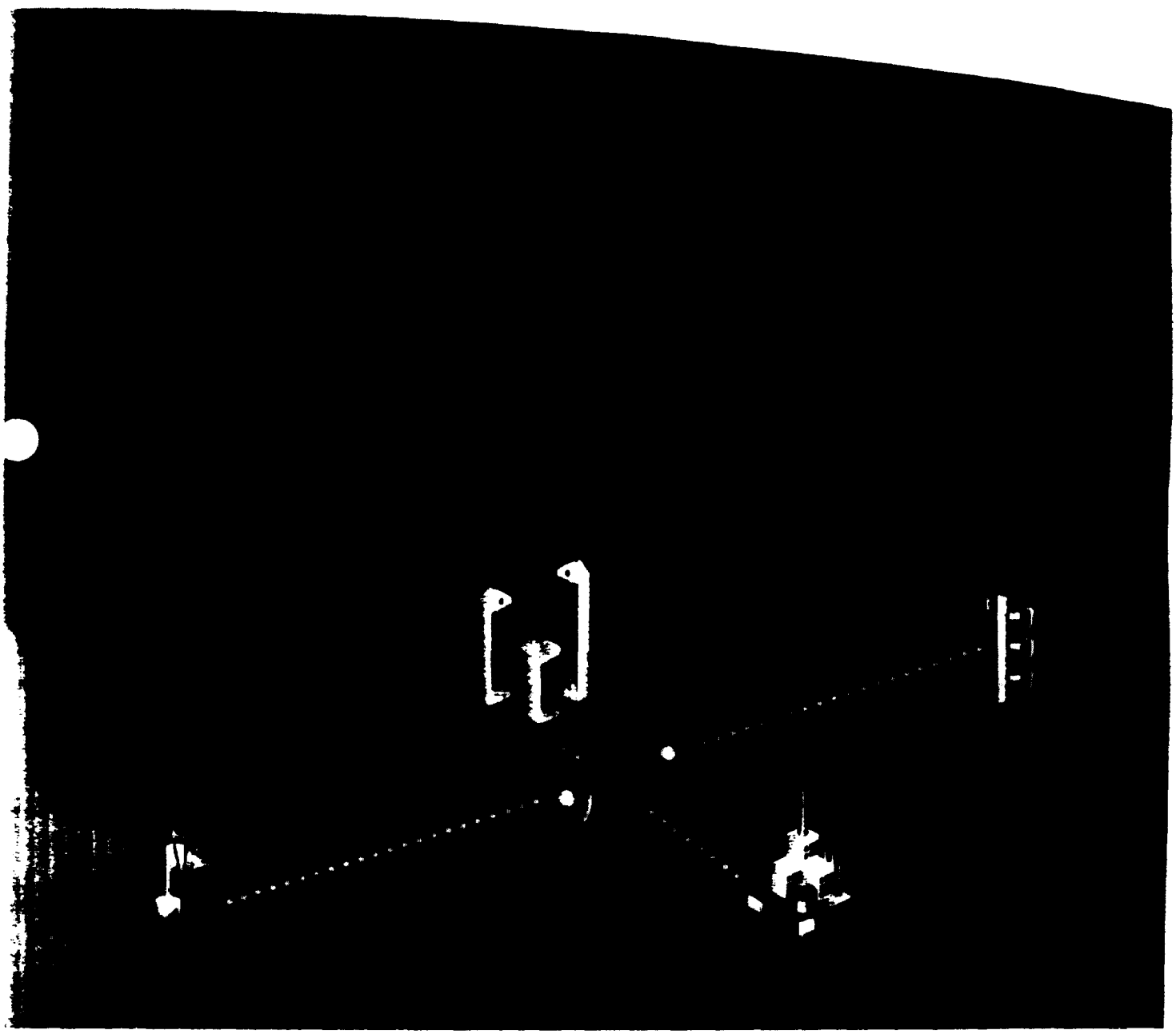
Cylink encourages the development of key technology and business partnerships that leverage strengths to create unique data security applications, as well as deploy existing ones.

Cylink's licensing structure is unique. For a *single flat fee* — rather than on-going royalty costs — partner-developers can incorporate Cylink technology into their own products. PassportGOLD™ Security Developer's Kit (SDK) provides all the functions partners need to embed powerful, standards-based encryption, digital signatures and key management into applications without having to become a crypto expert. And Cylink is the only licensor of the dominant public key Stanford patents — Diffie-Hellman and Hellman-Merkel key exchange.

This innovative approach of fixed licensing is intended to open up the market by providing developers with an improved, more cost-effective alternative to traditional software partnerships. Some of the businesses that have chosen Cylink as their partner, include: Cisco Systems, FTP Software, NetManage, Intel Corporation, General Magic and Atalla (a Tandem Computer company).

This kind of partnership makes sense. Cylink not only offers innovative and powerful security solutions, but also whatever it takes to build relationships that last.





The Rest of the Cylink Story

A Quality Attitude.

When customers purchase a system from Cylink, they acquire more than a product — they get the knowledge gained from years of technical expertise in information security and wireless communications. Cylink is committed to providing complete and comprehensive customer support with a single objective — developing and maintaining long-term relationships with the customer. • Cylink customer service includes pre-sales support, application guidance and consulting, installation services, product training, extended warranties, return and repair service, on-site maintenance and support, 24-hour toll-free hotline, qualified telephone technical support and emergency spares stocking services. • Customers may add maintenance and service contracts that provide extended warranties, emergency replacement services, product upgrades and on site support coverage, 24 hours each day, every day. Cylink has six service and support centers around the world in addition to factory-trained distributors and VARs in nearly 70 countries. Service Centers are located in the United Kingdom, Singapore, India, Pakistan, Russia and the U.S.

Wherever You Need Us, There We Are.

Meeting the challenges of the international market demands a business approach that is both comprehensive and flexible. Being a successful global provider of information security and wireless products is the highest priority at Cylink, and the best way to be successful is to do the job well. Cylink personnel are trained to understand every aspect of the business environment, local market and technical requirements — from product design, import/export regulations to shipping and service — in all countries where Cylink products are sold and serviced. • Cylink wireless products are designed with each country's characteristics and requirements in mind, whether it involves regional regulations or unusual technical requirements. Since Cylink remote wireless communications systems must adhere to local requirements, Cylink has a separate network of regional distributors for these products to ensure that each customer receives the highest quality attention possible for the life of the product.

Cylink Corporate Headquarters:
910 Hermosa Court
Sunnyvale, CA 94086 USA
Phone: 408 735-5800
Fax: 408 720-8294

Other Cylink locations throughout the USA include: Washington DC and New York metro areas, Atlanta, Dallas, Chicago, Kansas City, Northern and Southern California.

International Sales Offices:
UK, Singapore, China, Russia, India, Pakistan
Cylink UK Phone:
+44-1256-841919
Fax: +44-1256-24156
Cylink Singapore Phone:
65-297-6196
Fax: 65-297-6195

Fax on Demand:
USA: 800 735-6614
International: 408 735-6614

For more information regarding the address or telephone number in your area please call:
800 533-3958 (USA only) or
408 735-5800 (International)
E-mail: info@cylink.com
URL: http://www.cylink.com/

CYLINK.

M2263-296-25M

Global Wireless Connectivity

Extending Network Access For Voice and Data

CYLINK

Wireless Communications Group